

INVESTIGATION ON STRAIN BEHAVIOR OF *VERTICILLIUM DAHLIAE* ON MINT AND OTHER CROPS

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In past studies, about 80 % of *Verticillium dahliae* (VD) isolates from mint were highly pathogenic to mint, and about 20 % were only mildly pathogenic to mint VD from non-mint hosts (potato, echinacea, maple, cauliflower, and strawberry) and which may never have encountered mint, generally did not incite wilt of mint. However, there were exceptions in which non-mint isolates incited disease symptoms ranging from mild to severe. In 1999, research in the field focused on single and co-infestations of potato strains and mint strains (and various populations of each) in plots planted with both mint and potatoes to demonstrate to growers their disease potential, and also to gather data on possible reproduction of non-host strains in non-hosts. Field research was inconclusive because little wilt occurred on either mint or potatoes. In the greenhouse, mint and potato strains of VD were infested singly into soil in pots planted with alfalfa, dry bean, red clover, sweet corn, rye grass, wheat, potato, and mint. Roots of all species were colonized by both mint and potato strains; however, the potato strain colonized all hosts more abundantly (Table 1). VD microsclerotia of at least one of the two strains were recovered from dried stem tissue from each host. But this data is inconclusive, because VD was isolated from non-infested controls as well. This likely was due to contamination during the assay procedure. The stem population assay was repeated with modified procedures on a second set of samples taken early in the season. But as no VD was recovered even from mint or potato tissue, the sampling date may have been too early to detect stem colonization. For easier and perhaps more reliable identification of pathogen behavior in plants and soil, mint isolates of VD will be genetically transformed by inserting a gene that causes the isolates to fluoresce green. This transformation is still in progress, so transformed isolates have not yet been tested for normal behavior; e.g., pathogenicity and production of microsclerotia.

Table 1. Root populations of two strains of *Verticillium dahliae* from hosts and non-hosts grown in a greenhouse at OSU-COARC, Powell Butte, 1999.

VD Strain	CFU/cm root'							
	Host							
	Alfalfa	Dry Bean	Red Clover	Corn	Mint	Potato	Ryegrass	Wheat
Control ^b	0.00 BC	0.00 B	0.00 B	0.00	0.00	0.05 B	0.00	0.00 B
Mint	0.03 AB	0.04 B	0.01 B	0.00	0.17	0.01 B	0.00	0.04 B
Potato	0.10 A	0.15 A	0.12 A	0.00	0.08	1.19 A	0.03	0.04 A
P-value ^d	0.1027	0.0227	0.0036	0.1328	0.2937	0.0062	0.4472	0.0041
Strain	0.0543	0.0044	0.0004	0.4096	0.3768	0.0008	0.3406	0.0005

^aColony-forming-units per cm root tissue.

^bNon-inoculated.

^cMeans followed by the same letter are not significantly different at P<0.05 according to Fisher's protected least significant difference (LSD) test.

^dProbability of obtaining F<0₀₅

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